103. (Amended) A method of claim 100 wherein the chamber structure is provided in the form of a disc and includes digitally encoded information.

104. (Amended) The method of claim 100 wherein the chamber structure is transparent for an optical inspection of said wells from outside the structure.

REMARKS

The "Final" Office Action of July 26, 2001 and the Examiner's detailed comments therein have been carefully considered. Applicant, through undersigned counsel, wishes to thank the Examiner for the detailed comments with regard to the drawings and claims as to their compliance with the provisions of 35 USC § 112. It is requested that the within amendments be entered within the provisions of Rule 112 in order to place the application claims in compliance with the provisions of 35 USC § 112 for further prosecution by way of allowance, continuation or appeal as may appropriate.

It is noted that the previously submitted proposed drawing changes have been approved by the Examiner. The same will be included with the submission of formal drawings. Pursuant to the present amendment, the Examiner's approval of the addition of the proposed Fig. 7 is requested. As noted in paragraph 3 of the Office Action, the drawings must show every feature of the invention specified in the claims. A schematic representation of the plate structure 36 of Fig. 3 which includes a schematic representation of the location of digitally encoded address information is presented in the proposed Fig. 7. The second objection to the drawings of paragraph 3 with regard to the "device . . ." will be resolved upon entry of the present amendment wherein the recited claims 71, 75, 84, 88, 99 and 104 are being amended to remove such "device . . .".

Referring to paragraph 5 of the Office Action, claims 70, 83, 87, 98 and 103 have been amended to recite that the plate structure is provided in the form of a disc which the specification describes as a second embodiment.

Claims 71, 84, 88, 99 and 104 have been amended to delete reference to the "device", the plate structure being amended to recite that the plate structure is transparent for an optical inspection of said wells from outside the structure as recited in applicant's specification, inclusive of original claim 25.

Considering now the Examiner's comments of paragraph 7 of the Office Action, claim 45 has been amended to delete the indefiniteness of "sufficiently small", claim 51 had been amended to delete a dual reference by deleting "syringe or similar", claim 58 has been amended to delete the reference to "both directions", claim 97 has been similarly amended, "its" has been deleted from claims 63, 68 and 100, claim 66 has been amended to delete "can" and claim 71 has been amended to delete the word "type". Similarly claims 75, 84, 88, 89 and 101 are being amended by the present amendment to obviate the "type" objection. In addition claim 72 has been amended to delete "sufficiently shallow", claim 81 has been amended to delete reference to a first fluid and the proposed amendment to claim 102 through the addition of "an" is included.

It is respectfully submitted that the proposed amendment places the claims in compliance with the provisions of 35 USC § 112 and is responsive to each of the objections recited in the Office Action, paragraphs 1 through 7.

It is apparent that the primary references of Inoue and Croteau relied upon in paragraphs 9 and 10 of the Office Action do not disclose the provision of an assay structure or disc where the spacing between a lower surface having a plurality of wells and an opposed upper surface are "provided to facilitate fluid flow by capillary action" when a fluid is introduced into the space defined by the two surfaces. It is submitted that all of the claims as now presented avoid the prior 35 USC § 112 objections and thus are entitled to consideration of the novel and unobvious provision of applicant's construction and mode of operation in employing capillary action for fluid movement within the space provided by the apparatus and method claims as now presented. Reconsideration and withdrawal of the 35 USC § 102 rejection are requested.

The rejection of claims recited in paragraphs 11 and 12 of the Office Action rely upon the primary reference of Inoue meeting all of the terms of the claims but for additional features to be

combined from the Merkh et al. reference. It is respectfully submitted that the primary reference fails to meet such requirements of the claims and thus fails as a reference which can be combined with the secondary reference to render the obvious claims recited in paragraph 12 of the Office Action. It is therefore requested that the Examiner withdraw the rejection of paragraphs 11 and 12 of the Office Action based upon 35 USC § 103 as to the claims therein recited.

A telephone interview with the Examiner is requested should the Examiner determine that the within proposed amendment fails in any way to satisfy the requirements of the Office Action.

The Commissioner is hereby authorized to charge any additional filing fees under 37 C.F.R. § 1.16, or application processing fees under 37 C.F.R. § 1.17, which may be required now or during the pendency of this application, or credit any overpayment to Account No. 16-2230.

Respectfully submitted,

Dated: September 25, 2001

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Marked up Copy of the Specification to Show Changes

Page 10, following line 17 please add the following additional paragraph:

Fig. 7 depicts a location of digitally encoded address information at 39 on the underside of lower plate 36 of the disc 32 as seen in Fig. 3.

Page 13, please amend the second paragraph commencing at line 12 to read:

As is described in W/O 96/09548, one of the surfaces of the upper or lower plates 34, 36 may be provided with digitally encoded address information, as indicated at 39 in Fig. 7, which can be read by the scanned light beam. This information may be encoded by way of "pits" and "lans" pressed or moulded into one of the plates. This address information can be used to provide accurate location information on the part of the disk which is [begin] being scanned by the light beam.

Marked Up Copy of the Claims to Show Changes

45. (Amended) A multi-well assay plate structure comprising an upper surface and a lower spaced opposed surface, said upper and lower surfaces defining a space therebetween, the lower surface having a plurality of wells therein, at least one opening providing access to said space from an external location, the spacing between said upper and lower surfaces being [sufficiently small] provided to facilitate fluid flow by capillary action of a fluid introduced into said space through said opening to substantially fill the space and cover all of the wells, the wells being proportioned and dimensioned such that when excess fluid is subsequently withdrawn through said one or another opening, the wells remain substantially filled with liquid.

51. (Amended) The assay plate structure of claim 45 wherein said opening for introducing a fluid is provided to receive the end of a [syringe or similar] liquid injecting device, and said one opening forms a substantially air-tight seal around said end.

58. (Amended) The assay plate structure of claim 57 wherein the other of the upper and lower plates may comprise a reflecting surface [so that radiation entering into the structure through the transparent plate transverses the structure in both directions] for providing improved signal detection.

63. (Amended) The assay plate structure of claim 62 wherein the planar surface of at least one of said inserts includes upstanding walls around at least a portion of [its] a periphery of said surface for the purpose of sealing the inner edges of the insert to the opposed planar surface of the disc, thereby to prevent seepage of liquid around the insert.

66. (Amended) The assay plate apparatus of claim 65 wherein the structures and disc are made of plastic to allow [and] the sectors [can] to be snap-fitted onto the disc.

68. (Amended) The assay plate structure of claim 45 wherein the plate structure has a circumferential gutter extending around [its] a periphery of said plate structure to facilitate collection of fluid following fluid withdrawal from the chamber.

70. (Amended) The multi-well assay plate structure of claim 45 wherein the plate structure is provided in the form of a disc and includes digitally encoded address information.

71. (Amended) The multi-well assay plate structure of claim 45 wherein the plate structure is [provided] transparent for [use with a device having] an optical inspection [type format] of said wells from outside the structure.

72. (Amended) An assay plate structure for use in conducting optical assays of a fluid analyte, the plate structure comprising:

a disc for rotation about a central axis, the disc having upper and lower plates spaced apart a [sufficiently shallow] distance to facilitate the flow of a fluid between said plates by capillary action and a plurality of substantially radially extending walls disposed between the plates, said walls sub-dividing the disc into a plurality of disc sectors; and

a plurality of disc inserts arranged to be received by respective disc sectors and to be retained therein,

the structure further including a plurality of openings through the upper plate, at least one opening above each disc sector for introducing a liquid analyte into the sector space between the upper plate and the disc insert, the upper surface of each disc insert and the opposed surface of the upper plate being substantially planar, and the flow of fluid between the upper plate and the disc insert being facilitated by capillary action.

74. (Amended) The assay plate structure of claim 72 wherein the plate structure is provided in the form of a disc and includes digitally encoded address information.

75. (Amended) The assay plate structure of claim 72 wherein the plate structure is transparent [provided] for [use with a device having] an optical inspection [type format] of said wells from outside the structure.

81. (Amended) The method of claim 79 wherein the surfaces with wells having the first [fluid carrying] reagent [reagents] are prior prepared for loading into the structure.

83. (Amended) The method of claim 79 wherein the chamber structure is provided in the form of a disc and includes digitally encoded information.

84. (Amended) The method of claim 79 wherein the chamber structure is transparent [provided] for [use with a device having] an optical [reader type format] inspection of said wells from outside the structure.

85. (Amended) A method of conducting an assay using a multi-sample assay plate structure comprising:

an upper surface,

a lower surface spaced from the upper surface by wall means to define a chamber with the upper and lower surfaces spaced a [preset] distance apart, [the distance being sufficiently shallow] to facilitate the flow of a fluid between said surfaces by capillary action,

the chamber having an inlet and an outlet, the inlet and outlet allowing fluid to be introduced to, and withdrawn from, the chamber, the lower surface being adapted to receive spots of an insoluble substrate, carrying a first reagent, or no reagent if a control spot, to create a plurality of separate reaction sites , and at least a second reagent is present in the fluid for reacting with the first reagent to create an observable reaction in the chamber.

87. (Amended) The method of claim 85 wherein the assay plate structure is provided in the form of a disc and includes digitally encoded address information.

88. (Amended) The method of claim 85 wherein the plate structure is transparent [provided] for [use with a device having a digitally encoded disc type format] an optical inspection of said wells from outside the structure.

97. (Amended) The assay plate structure of claim 96 wherein the other of the upper and lower plates may comprise a reflecting surface [so that radiation entering into the structure through the transparent plate transverses the structure in both directions] for providing improved signal detection.

98. (Amended) The assay plate structure of claim 89 wherein the plate structure is provided in the form of a disc and includes digitally encoded information.

99. (Amended) The assay plate structure of claim 98 wherein the plate structure is transparent [provided] for [use with a device having] an optical [reading apparatus type format] inspection of said wells and encoded information from outside the disc.

100. (Amended) A method of conducting a chemical or biochemical assay said method comprising:

providing a surface within a substantially enclosed chamber having a plurality of reaction sites at spaced locations to allow monitoring of a reaction at each site location, said surface being treated to increase [its] surface hydrophobicity between sites, the sites being treated to increase the hydrophilicity thereof to retain a volume of fluid at each site following introduction of a fluid into, and subsequent withdrawal of excess fluid from, the chamber, and the chamber being provided to facilitate the flow of a fluid in said chamber by capillary action,

treating each site with a first reagent, flooding the enclosed chamber and covering the sites with a fluid carrying at least a second reagent,

removing excess fluid from said chamber to leave a mixture of said first and second reagents at each site, and

optically assessing sites and determining if a reaction occurred and correlating the reaction results to provide an assay of the chemical or biochemical reactions under test.

102. (Amended) The method of claim 100 wherein after optical assessment of the results of the assay, an automated fluid handling apparatus is used to inject and withdraw rinsing fluid a predetermined number of times from the chamber to clean the sites for receiving subsequent samples for assay.

103. (Amended) A method of claim 100 wherein the chamber structure is provided in the form of a disc and includes digitally encoded information.

104. (Amended) The method of claim 100 wherein the chamber structure is transparent [provided] for [use with a device having] an optical [reader type format] inspection of said wells from outside the structure.